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North Carolina Department of Transportation
Statewide Planning Branch
Small Urban Planning Unit

THOROUGHFARE PLAN FOR

COFIELD

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THOROUGHFARE PLAN
FOR
COFIELD, NORTH CAROLINA


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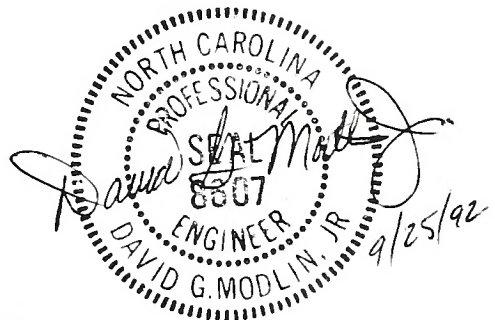
Statewide Planning Branch
Division of Highways
N. C. Department of Transportation

In cooperation with:

The Village of Cofield
The Federal Highway Administration
U. S. Department of Transportation

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I. INTRODUCTION

The Village of Cofield is a small community located in the northern Coastal Plain in the eastern part of Hertford County. The Village developed around Sally Archer's Crossroad in the late 19th century. In 1896, B.G. Williams' Timber Company requested a post office to serve the needs of the area. Shortly after the turn of the century, the name "Cofield" was chosen.

Cofield became an active shipping center and passenger train stop on the Norfolk and Carolina rail line. Goods and livestock from Winton and Harrellsville were shipped from the Cofield station.

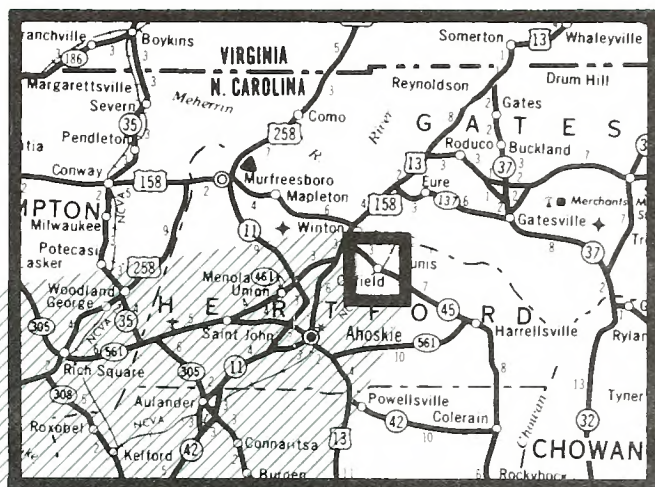
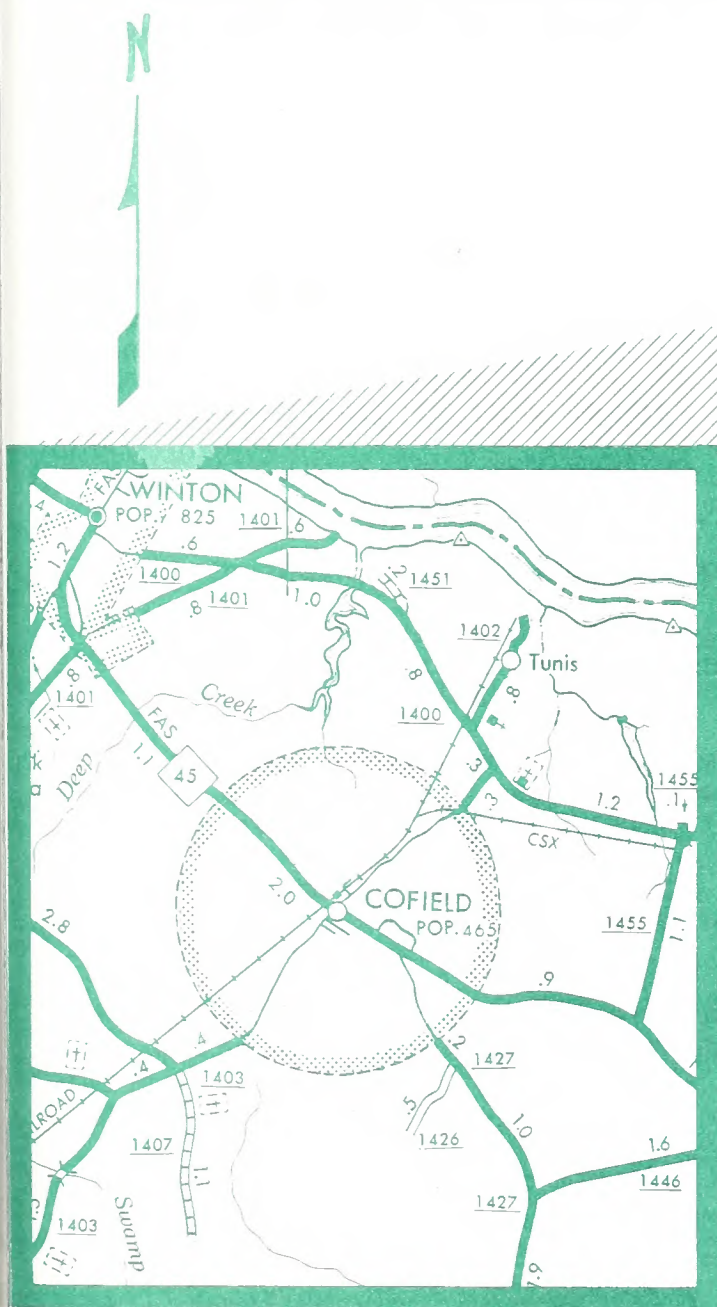
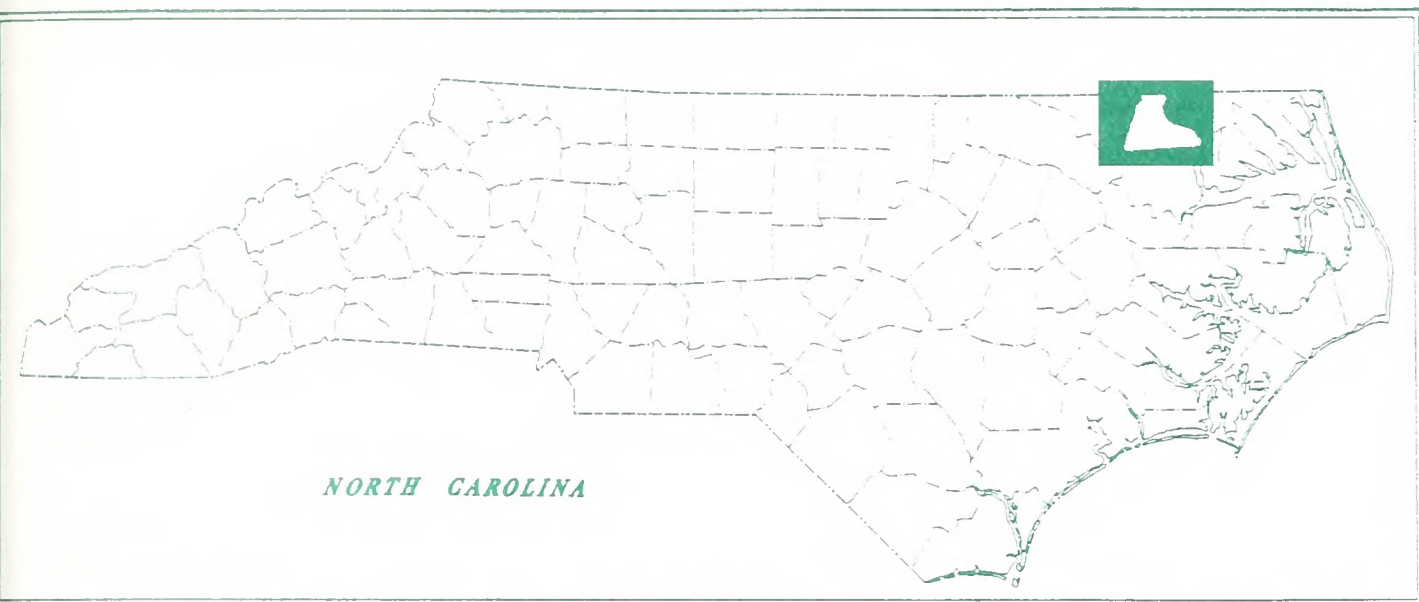
Cofield is located approximately 5 miles north of Ahoskie, North Carolina. The Chowan River is about 1.3 miles from the northern Village limits (see Figure 1). The climate of Hertford County is temperate with cold, but not severe, winters and moderately warm summers.

In January, 1991, the Village of Cofield requested the Statewide Planning Branch of the North Carolina Department of Transportation to assist the Village in preparing a thoroughfare plan. A plan was developed and the Village of Cofield officially adopted the Cofield Thoroughfare Plan, map dated December 17, 1991, on October 7, 1991. The North Carolina Board of Transportation mutually adopted the plan on February 7, 1992.

This plan was developed based on general traffic, population, and land use data. Year 2020 average daily traffic projections were used to determine capacity deficiencies. Major and minor thoroughfares were located based on field investigations, existing and anticipated land uses, and topographic conditions.

It should be emphasized that the recommended plan is based on existing conditions and anticipated growth of the urban area as currently perceived. Prior to construction of specific projects, a more detailed study will be required to reconsider development trends and to determine specific locations and design requirements.

The purpose of this report is to document the study findings and recommendations. Included are recommendations for thoroughfare cross-sections, cost estimates for recommended improvements, and plan implementation recommendations.



COFIELD

**GEOGRAPHIC LOCATION
FIGURE 1**

II. THOROUGHFARE PLANNING PRINCIPLES

Objectives

Typically, the urban street system occupies 25 to 30 percent of the total developed land in an urban area. Since the system is permanent and expensive to build and maintain, much care and foresight are needed in its development. Thoroughfare planning is the process public officials use to assure the development of the most appropriate street system that will meet existing and future travel desires within the urban area.

The primary aim of a thoroughfare plan is to guide the development of the urban street system in a manner consistent with the changing traffic patterns. A thoroughfare plan will enable street improvements to be made as traffic demands increase, and it helps eliminate unnecessary improvements, so needless expense can be averted. By developing the urban street system to keep pace with increasing traffic demands, a maximum utilization of the system can be attained, requiring a minimum amount of land for street purposes. In addition to providing for traffic needs, the thoroughfare plan should embody those details of good urban planning necessary to present a pleasing and efficient urban community. The location of present and future population and commercial and industrial development affects major street and highway locations. Conversely, the location of major streets and highways within the urban area will influence the urban development pattern.

Other objectives of a thoroughfare plan include:

1. providing for the orderly development of an adequate major street system as land development occurs,
2. reducing travel and transportation costs,
3. reducing the cost of major street improvements to the public through the coordination of the street system with private action,
4. enabling private interests to plan their actions, improvements, and development with full knowledge of public intent,
5. minimizing disruption and displacement of people and businesses through long range advance planning for major street improvements,
6. reducing environmental impacts, such as air pollution, resulting from transportation, and
7. increasing travel safety.

Factors Affecting Transportation

The objective of thoroughfare planning is to develop a system of streets and highways which will enable people and goods to travel safely and economically. To determine the needs of the Village, the factors of population, land use, and traffic must be examined. To properly plan for the transportation needs of Cofield, it is important to understand and describe the type and volume of travel which takes place in the area, and also to clearly identify the goals and objectives to be met by the transportation plan.

In order to fulfill the objectives of an adequate thirty-year Thoroughfare Plan, reliable forecasts of future travel patterns must be achieved. Such forecasts are possible only when the following major items are carefully analyzed: (1) historic and potential population changes; (2) significant trends in the economy; and (3) character and intensity of land development. Additional items that vary in influence include the effects of legal controls such as zoning ordinances and subdivision regulations, availability of public utilities and transportation facilities, and topographic and other physical features of the area.

III. EXISTING AND PROJECTED CONDITIONS

Cofield is served primarily by NC 45 and Ahoskie-Cofield Road (SR 1403). The intersection of NC 45 and SR 1403 is the center of the Village. SR 1403 connects Cofield to Ahoskie in the south and to River Road (SR 1400) to the north. NC 45 connects Cofield to Harrellsville and Bertie County in the east and to Winton in the northwest. Other streets are generally residential. All routes in Cofield are currently two lane.

POPULATION TRENDS

The volume of traffic on a section of roadway is a function of the size and location of the population it serves. An analysis of population is one of the first steps for transportation planners. The analysis of past trends allows the planner to estimate the future population and the volumes of traffic which it will generate with some degree of reliability.

Since 1970, the population of Hertford County has remained almost steady, averaging a 0.4% annual decrease. Cofield's population increased in the 70's and experienced a moderate decrease in the 80's. The North Carolina Office of State Budget and Management's population projection for Hertford County shows a slight decline in population for the next 20-30 years (0.14% average annual decline). The same rate was used to project Cofield's population (see Table 1).

TABLE 1		
POPULATION TRENDS AND PROJECTIONS		
YEAR	HERTFORD COUNTY	COFIELD
1970	24,439	318
1980	23,368	465
1990	22,523	407
2010	21,891 *	396 **
2020	21,519 *	390 **

* Projections for Hertford County, State Budget And Management

** Projections for Cofield based on Hertford County's growth rate

Economy and Employment

Most Cofield residents are employed in nearby communities such as Ahoskie, Winton, and Murfreesboro. Only two are employed at the Perdue facility in Cofield although the plant employs 125 people, most of which commute from Ahoskie. Approximately 36 people reported working out of the state and another 27 worked outside Hertford County. It appears that Cofield has shifted from an agricultural community to a bedroom community for larger towns.

TRAVEL DEMAND

Travel demand is generally reported in the form of average daily traffic counts. Traffic counts are taken regularly at several locations in and around Cofield by the North Carolina Department of Transportation. To estimate future travel demand, traffic trends over the past twenty years were studied.

A comparison of traffic volumes from 1970 to 1991 at various count locations in Cofield shows average annual growth rates ranging from 0.4% to 2.86%. The largest growth was noted on NC 45. Table 2 shows existing and projected average daily traffic volumes based on growth rates of 2% (moderate growth) to 3.0% (high growth).

Table 2					
COFIELD TRAFFIC VOLUMES AND PROJECTIONS					
LOCATION	1970	1981	1991	2010	2020
NC 45 NW of SR 1403	1,050	1,400	1,900	3,330	4,480
SR 1403 NE NC 45	780	1,250	900	1,310	1,600
SR 1403 SW NC 45	1,170	1,800	2,000	3,260	4,210
SR 1427 SOUTH OF NC 45	460	350	500	730	888

There are no capacity related problems in the Cofield area through the 30-year planning period. The most notable immediate problem is the northern section of SR 1403. This road accommodates 175-350 truck-tractor semi-trailers (TTST) daily. According to Perdue plant officials, as many as 30 trucks line up to enter the plant at peak season (September through March).

Truck-tractors semi-trailers are 8.5 feet wide and 55-65 feet long. The required length of the storage lane to accommodate the peak season truck traffic safely and efficiently can be calculated as follows:

$30 \text{ (trucks)} \times 70 \text{ (feet)} = 2100 \text{ (feet)}$, length of required northbound storage lane for the Perdue Plant on SR 1403.

The existing storage lane for trucks at the Perdue Plant on SR 1403 is 1000 feet long which does not meet the storage lane length of 2100 feet required during peak season.

TRAFFIC ACCIDENTS

From January 1989 through December 1991, there were no significant accident locations within Cofield. Traffic accident data was received from the North Carolina Department of Transportation, Traffic Engineering Branch.

LAND USE

The Village of Cofield is a small community, surrounded by prime farmland and forests. The Chowan River is one and half miles north of the Village. Most of the developed land area within Cofield is used for residential purposes. The majority of open land in the Village is used for agricultural or forestry purposes. There are no storm water or public sewers in Cofield. Drainage occurs based on land elevation or artificial trenching. Elevations are low, ranging from 12 to 14 feet above Mean Sea Level. Soils in Cofield have a relatively high water table and drainage is poor. Standing water impedes the operation of already inadequate septic tanks. There is one industry in Cofield, Perdue Farms on SR 1403, which processes soybeans into feed.

IV. Thoroughfare Plan Recommendations

The following is a list of roads that are recommended to serve as major and minor thoroughfares in Cofield. Figure 2 shows the Thoroughfare Plan for Cofield, North Carolina. All the roads in Cofield are 2-lane facilities that are less than 24 feet wide. It is desirable from an operations and safety standpoint that roads with less than 24 feet of pavement be widened to 24 feet (12-foot travel lanes).

Major Thoroughfares

NC 45 - NC 45 is a 2-lane facility which passes through the center of the Village. NC 45 is recommended to be widened to 12-foot travel lanes with shoulders as listed in Appendix A, Table A1. Construction cost for this project is estimated at \$725,000.00.

SR 1403 - Ahoskie-Cofield Road from the southern Village limits to NC 45 is a 2-lane facility. It is recommended to widen this section of SR 1403 to 12-foot travel lanes with shoulders as listed in Appendix A, Table A1. Construction cost for this project is estimated at \$360,000.00.

Minor Thoroughfare

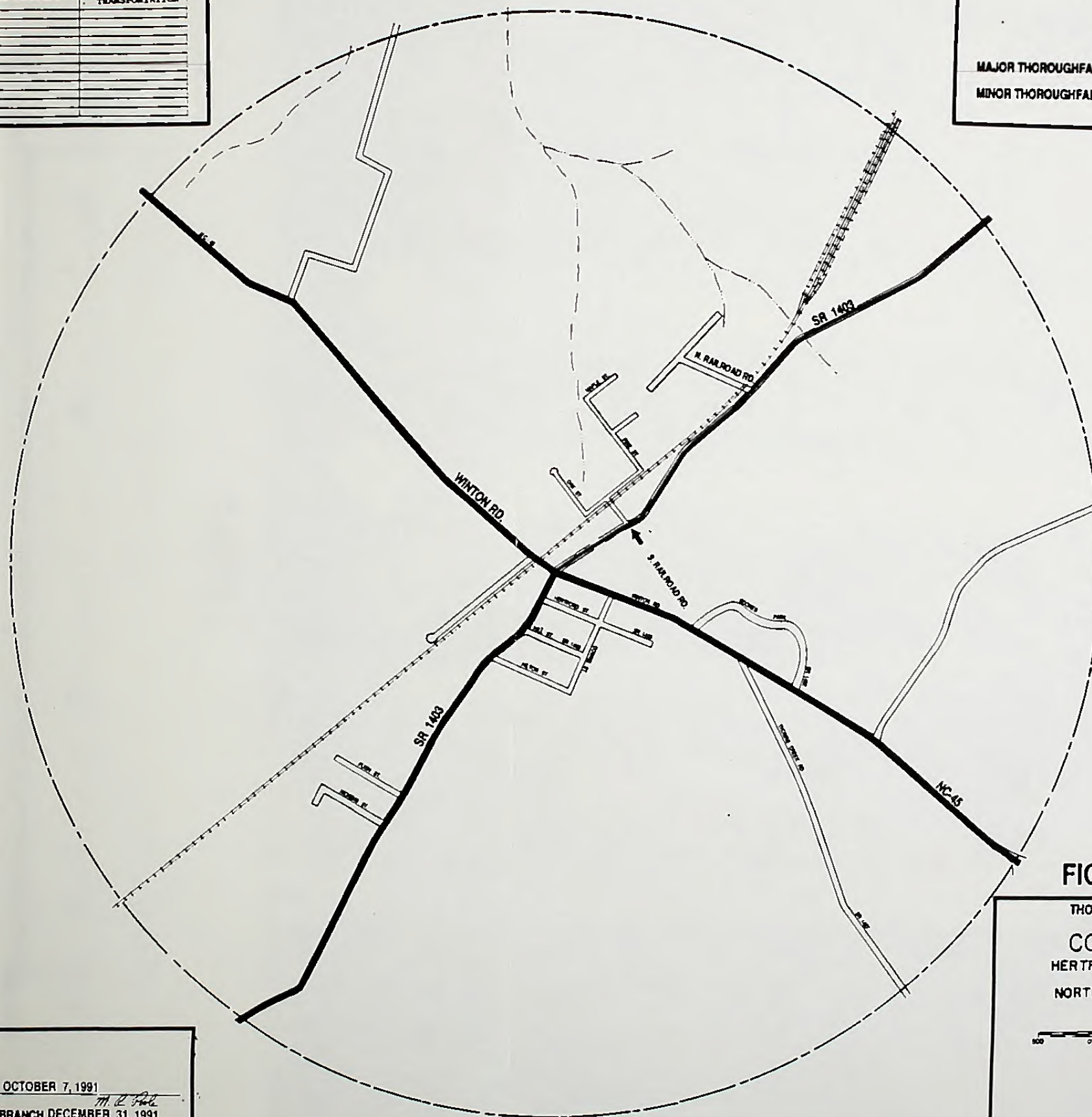
SR 1403 - Ahoskie-Cofield Road from the intersection with NC 45 to SR 1400 (River Road) is a 2-lane facility with 20 feet of pavement and 40 feet of right-of-way. Additional right-of-way will be difficult to acquire due to the existence of 14 dwelling units on both sides of SR 1403 and the proximity of the CSX railroad which runs parallel to SR 1403. Perdue Farms is located about one mile north of the intersection on SR 1403. Perdue Farms processes soybeans into chicken feed; therefore, it generates heavy truck volumes on SR 1403. Depending on the season, truck volumes range from 175-350 trucks per day. Peak season starts in September and ends in March.

Table III-21, on page 209 of 1990 AASHTO Geometric Design of Highways and Streets, indicates that the minimum design width of pavement for 2-lane truck routes is 29 feet.

It is recommended to widen this section of SR 1403 to 2-lane, 34 feet of pavement with curb and gutter. The proposed cross section includes the provision for passing a stalled vehicle and will improve the existing drainage problem. Figure 3 shows the proposed cross section for SR 1403 in Cofield. Additional right-of-way will be necessary to either extend the existing storage lane on SR 1403 to 2100 feet or to construct a second storage lane. Perdue Plant officials have indicated that they will cooperate with the North Carolina Department of Transportation by donating additional right-of-way at the plant frontage along SR 1403 to construct a second storage lane. Construction cost for this project is estimated at \$960,000.00.

[illegible]

	EXISTING	PROPOSED
MAJOR THOROUGHFARES	————	————
MINOR THOROUGHFARES	————	————



THOROUGHFARE
PLAN
COFIELD
HERTFORD COUNTY
NORTH CAROLINA



ADOPTED BY:

TOWN OF COFIELD OCTOBER 7, 1991
STATEWIDE PLANNING BRANCH DECEMBER 31, 1991
DEPT. OF TRANSPORTATION FEBRUARY 7, 1992
PUBLIC HEARING NONE

**PROPOSED CROSS SECTION FOR
SR 1403
COFIELD
FROM NC 45 TO SR 1400**

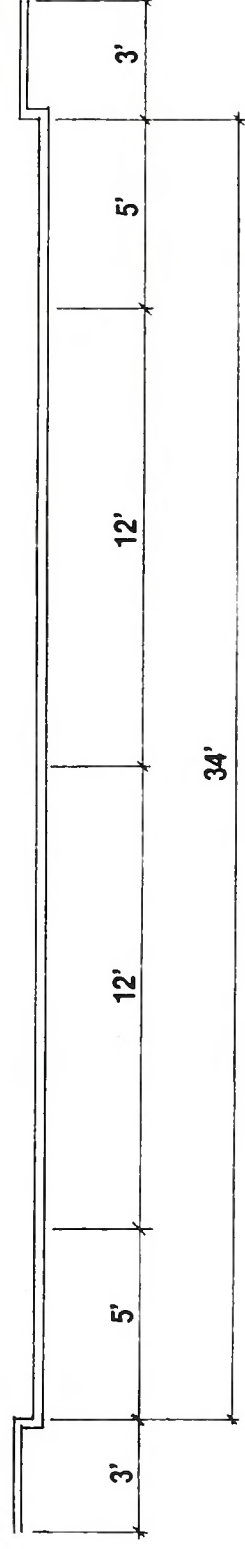


FIGURE 3

NC 45 / SR 1403 Intersection: The North Carolina Department of Transportation, in cooperation with the Town of Cofield, has just finished reconstruction of this intersection. By acquiring additional right-of-way, the intersection sight distance has been improved. By increasing the intersection turning radius to 50 feet and adding turn lanes on NC 45, the efficiency of the intersection to accommodate trucks has been improved. According to AASHTO, the minimum turning radius required for WB-60 design vehicles is 45 feet. Also by constructing curb and gutter, the intersection drainage problem has been fixed.

When traffic warrants are met, it is recommended that a traffic signal be installed at this intersection to ensure safety and efficiency.

Local Residential Streets: Most of the local residential roads are not paved. A priority order for paving these local roads was developed based on the number of dwelling units on each road. The priority order is as follows:

1. Downs Street;
2. Hilton Street;
3. Pugh Street;
4. Nickens Street;
5. Pine Street; and
6. Oak Street.

V. IMPLEMENTATION

State-Municipal Adoption of the Thoroughfare Plan

Both the Village of Cofield and the North Carolina Department of Transportation have responsibility for implementation of the Cofield Thoroughfare Plan. Chapter 136, Article 3A, Section 136-66.2 of the General Statutes of North Carolina provides that after development of a thoroughfare plan, the plan may be adopted by the governing body of the municipality and the Department of Transportation to serve as the basis for future street and highway improvements. The Thoroughfare Plan for Cofield was adopted by the Village of Cofield on October 7, 1991 and by the North Carolina Department of Transportation on February 7, 1992. The General Statutes also require that, as part of the plan, the governing body of the municipality and Department of Transportation shall reach agreement on responsibilities for existing and proposed streets and highways included in the plan. Facilities which are designated a State responsibility will be constructed and maintained by the Division of Highways; however, the municipality will share in the right-of-way costs. This share of costs will be determined at the time of construction.

In general, the State is responsible for those facilities which will be serving major volumes of through traffic and traffic from outside the area to major commercial, industrial, and institutional areas inside the municipality. Those facilities which will serve primarily internal traffic are to be a municipal responsibility.

After adoption of the thoroughfare plan, a municipality has the legal authority provided by the General Statutes of North Carolina to protect existing and proposed highway corridors through subdivision regulations and future street-line ordinances. On highway projects that are designated as state responsibility, the municipality's share of the right-of-way is partially determined by the extent that the municipality has protected the proposed corridor. This has long-range implications to a municipality's budget because right-of-way costs on unprotected corridors often greatly exceed construction costs.

Capital Improvement Program

A capital improvement program makes it easier to build a planned thoroughfare system. This capital improvement program consists of two lists of projects. The first is a list of highway projects that are designated as a municipal responsibility and are to be implemented with municipal funds. The second is a list of local projects designated as State responsibility to be included in the Transportation Improvement Program.

Subdivision Controls

A subdivision ordinance requires that every subdivider submit to the Town Planning Commission a plot of his or her proposed subdivision. Certain standards must be met by the developer before he or she can be issued a building permit to construct the development. Through this process, it is possible to reserve or protect the necessary right-of-way for proposed streets which are a part of the thoroughfare plan and to require street construction in accordance with the plan.

Zoning

A zoning ordinance can be beneficial to thoroughfare planning by designating appropriate locations of various land use and allowable densities of residential development. This provides a degree of stability on which to make future traffic projections and to plan streets and highways.

Other benefits of a good zoning ordinance are: (1) the establishment of standards of development which will aid traffic operations on major thoroughfares and (2) the minimization of strip commercial development which creates traffic friction and increases the traffic accident potential.

Official Street Map

A municipality may, through special enabling legislation, adopt an official street map which indicates both existing and future street lines. Under this legislation, no new construction or reconstruction of structures would be permitted within the designated future street lines. Over a period of time, this would reduce the cost of additional right-of-way along densely developed thoroughfare which will require widening at some future date.

TABLE 3

FUNDING SOURCES AND METHODS RECOMMENDED FOR IMPLEMENTATION OF PROJECTS									
Projects	Funding Sources				Methods of Implementation				
	Local Funds	TIP Funds	Industrial Access Funds	Small Urban	T-fare Plan	Subdiv. Ord.	Zoning Ord.	Future Street Lines	Development Review
NC 45 Widening	X			X	X	X	X		X
SR 1403 Widening North of NC 45	X			X	X	X	X		X
SR 1403 Widening South of NC 45	X			X	X	X	X		X

APPENDIX A

Typical Thoroughfare Cross Section Explanations

Typical cross sections recommended by the Statewide Planning Branch are shown in Appendix A, Figure A1, and listed in Appendix A, Table A1.

Cross section "A" is typical for controlled access freeways. The 46 foot grassed median is the minimum median width. Wider variations could result depending upon design considerations. Slopes of 8:1 into 3 foot drainage ditches are desirable for traffic safety. Right-of-way requirements would typically vary upward from 250 feet depending upon cut and fill requirements.

Cross section "B" is typical for four lane divided highways in rural areas that may have only partial or no control of access. The minimum median width for this cross section is 30 feet, but a wider median is desirable. Design requirements for slopes and drainage would be similar to cross section "A", but there may be some variation from this depending upon right-of-way constraints.

Cross section "C", seven lane urban, and cross section "D", five lane urban, are typical for major thoroughfares where frequent left turns are anticipated as a result of abutting development or frequent street intersections.

Cross sections "E" and "F" are used on major thoroughfares where left turns and intersecting streets are not as frequent. Left turns would be restricted to a few selected intersections.

Cross section "G" is recommended for urban boulevards or parkways to enhance the urban environment and to improve the compatibility of major thoroughfares with residential areas. A minimum median width of 24 feet is recommended with 30 feet being desirable.

Typical cross section "H" is recommended for major thoroughfares where projected travel indicates a need for four travel lanes, but traffic is not excessively high, left turning movements are light, and right-of-way is restricted. An additional left turn lane would probably be required at major intersections.

Thoroughfares which are proposed to function as one-way traffic carriers would typically require cross section "I".

Cross sections "J" and "K" are recommended for minor thoroughfares since these facilities usually serve both land service and traffic service functions. Cross section "J"

would be used on those minor thoroughfares where parking on both sides is needed as a result of more concentrated development.

Cross section "L" is used in rural areas or for staged construction of a wider multilane cross section. On some thoroughfares, projected traffic volumes may indicate that two travel lanes will adequately serve travel for a considerable period of time.

The curb and gutter cross sections all illustrate the sidewalk next to the curb with a buffer or utility strip between the sidewalk and the minimum right-of-way line. This permits adequate setback for utility poles. If it is desired to move the sidewalk farther away from the street to provide added separation for pedestrians or for aesthetic reasons, additional right-of-way must be provided to insure adequate setback for utility poles.

Rights-of-way shown for the typical cross sections are the minimum rights-of-way required to contain the street, sidewalks, utilities, and drainage facilities. Cut and fill requirements may require either additional right-of-way or construction easements. Obtaining construction easements is becoming the more common practice for urban thoroughfare construction.

If there is sufficient bicycle traffic along the thoroughfare to justify a bicycle lane or bikeway, additional right-of-way may be required to allow for the bicycle facilities. The North Carolina Bicycle Facility and Program Handbook should be consulted for bicycle facility design standards.

Recommended typical cross sections for thoroughfares were derived using projected traffic, existing capacities, desirable levels of service, and available right-of-way.

TYPICAL THOROUGHFARE CROSS SECTIONS

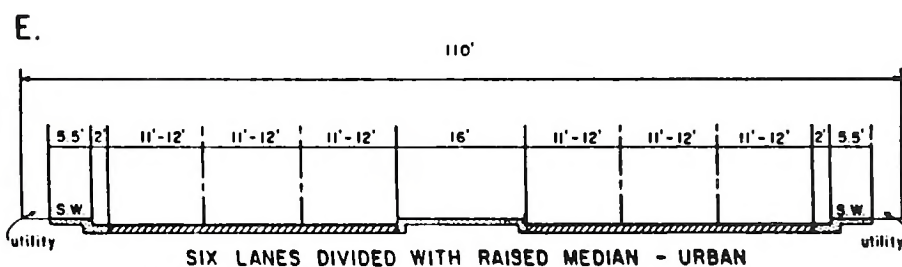
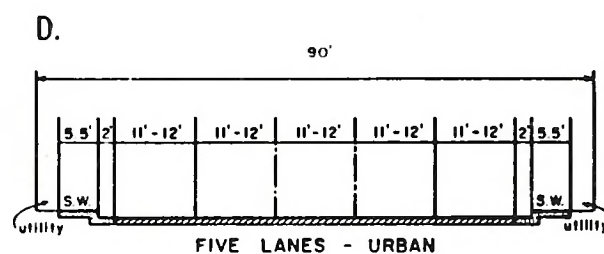
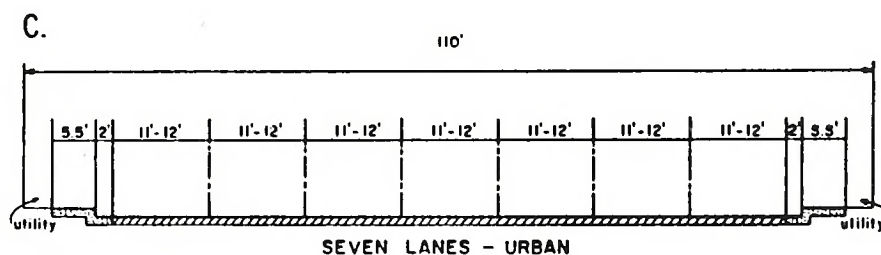
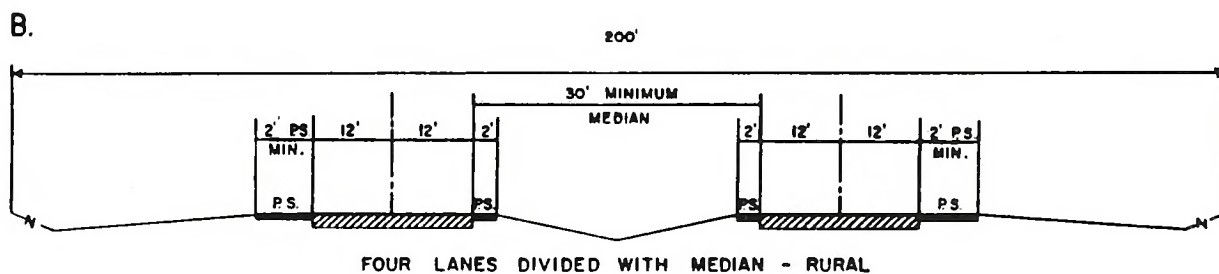
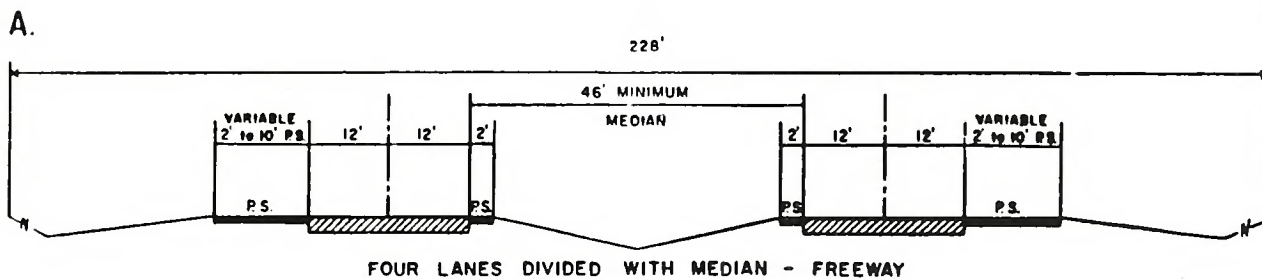
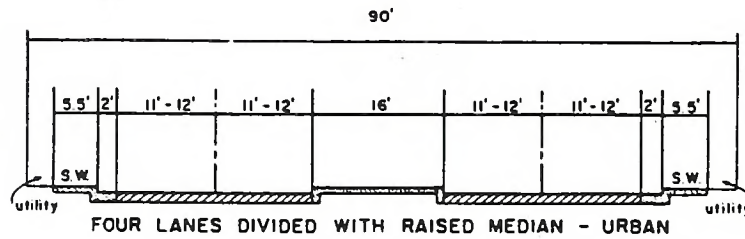


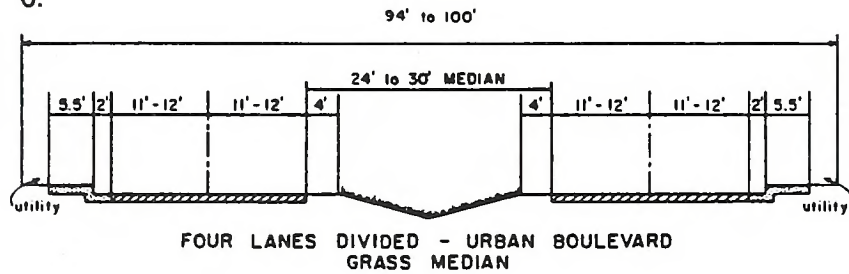
FIGURE A1

TYPICAL THOROUGHFARE CROSS SECTIONS (CONTINUED)

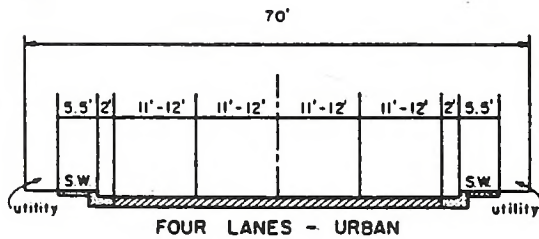
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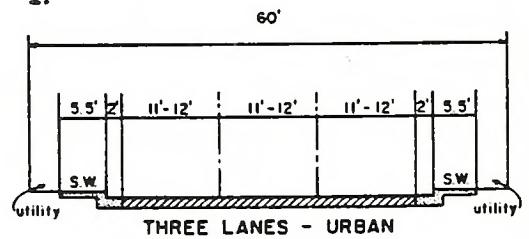
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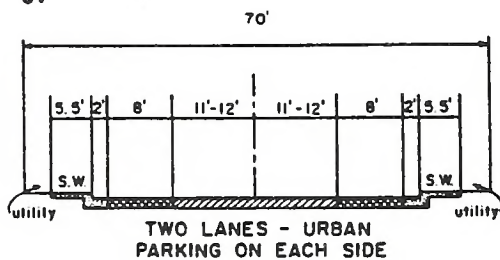
H.



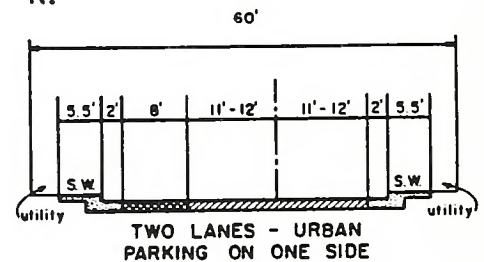
I.



J.



K.



L.

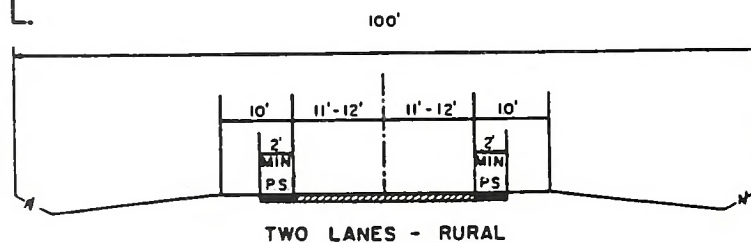


TABLE A1 - THOROUGHFARE PLAN STREET TABULATION AND RECOMMENDATIONS

FACILITY AND SECTION	EXISTING CROSS SECTION			CAPACITY CURRENT (FUTURE)	RECOMMENDED			
	DIST MI	RDWY FT	ROW FT		1991 ADT	2020 ADT	RDWY (ULT)	ROW (ULT)
NC 45								
ECL COFIELD-SR 1403	1.00	20	60	8,300	1,900	4,480	(L)	ADQ
SR 1403-WCL COFIELD	1.00	20	60	8,300	1,900	4,480	(L)	ADQ
SR 1403								
SCL COFIELD-NC 45	1.12	22	40	9,200	2,000	4,210	(L)	ADQ
NC 45-SR 1400	1.20	20	40	8,300	900	1,600	FIG 3	ADQ
SR 1462 (BOONES PARK RD)								
NC 45-NC 45	0.33	20	60	8,300	170	300	(L)	ADQ
SR 1427 (THOMAS CREEK RD)								
NC 45-SCL	0.66	18	60	6,600	500	890	(L)	ADQ

APPENDIX B

RECOMMENDED SUBDIVISION ORDINANCES

Definitions

I. Streets and Roads:

A. Rural Roads

1. Principal Arterial - A rural link in a highway system serving travel, and having characteristics indicative of substantial statewide or interstate travel and existing solely to serve traffic. This network would consist of Interstate routes and other routes designated as principal arterials.
2. Minor Arterial - A rural roadway joining cities and larger towns and providing intrastate and inter-county service at relatively high overall travel speeds with minimum interference to through movement.
3. Major Collector - A road which serves major intra-county travel corridors and traffic generators and provides access to the Arterial system.
4. Minor Collector - A road which provides service to small local communities and traffic generators and provides access to the Major Collector system.
5. Local Road - A road which serves primarily to provide access to adjacent land, over relatively short distances.

B. Urban Streets

1. Major Thoroughfares - Major thoroughfares consist of Interstate and other freeway, expressway, or parkway roads, and major streets that provide for the expeditious movement of high volumes of traffic within and through urban areas.
2. Minor Thoroughfares - Minor thoroughfares collect traffic from local access streets and carry it to the major thoroughfare system. Minor thoroughfares may be used to supplement the major thoroughfare system by facilitating minor through-traffic movements and may also serve abutting property.
3. Local Street - A local street is any street not on a higher order urban system and serves primarily to provide direct access to abutting land.

C. Specific Type Rural or Urban Streets

1. Freeway, expressway, or parkway - Divided multilane roadways designed to carry large volumes of traffic at high speeds. A freeway provides for continuous flow of vehicles to selected crossroads only by way of interchanges. An expressway is a facility with full or partial control of access and generally with grade separations at major intersections. A parkway is for non-commercial traffic, with full or partial control of access.
2. Residential Collector Street - A local street which serves as a connector street between local residential streets and the thoroughfare system. Residential collector streets typically collect traffic from 100 to 400 dwelling units.
3. Local Residential Street - Cul-de-sacs, loop streets less than 2,500 feet in length, or streets less than one mile in length that do not connect thoroughfares, or serve major traffic generators, and do not collect traffic from more than 100 dwelling units.
4. Cul-de-sac - A short street having only one end open to traffic and the other end being permanently terminated and a vehicular turn-around provided.
5. Frontage Road - A road that is parallel to a partial or full access controlled facility and provides access to adjacent land.
6. Alley - A strip of land, owned publicly or privately, set aside primarily for vehicular service access to the back side of properties otherwise abutting on a street.

II. Property

- A. Building Setback Line - A line parallel to the street in front of which no structure shall be erected.
- B. Easement - A grant by the property owner for use by the public, a corporation, or person(s), of a strip of land for a specific purpose.
- C. Lot - A portion of a subdivision, or any other parcel of land, which is intended as a unit for transfer of ownership or for development or both. The word "lot" includes the words "plat" and "parcel".

III. Subdivision

- A. Subdivider - Any person, firm, corporation or official agent thereof, who subdivides or develops any land deemed to be a subdivision.
- B. Subdivision - All divisions of a tract or parcel of land into two or more lots, building sites, or other divisions for the purpose, immediate or future, of sale or building development and all divisions of land involving the dedication of a new street or change in existing streets; provided, however, that the following shall not be included within this definition nor subject to these regulations: (1) the combination of portions of previously platted lots where the total number of lots is not increased and the resultant lots are equal to or exceed the standards contained herein; (2) the division of land into parcels greater than ten acres where no street right-of-way dedication is involved; (3) widening of open streets; (4) the division of a tract in single ownership whose entire area is no greater than two acres into not more than three lots, where no street right of way dedication is involved and where the resultant lots are equal to or exceed the standards contained herein.
- C. Dedication - A gift, by the owner, of his property to another party without any consideration being given for the transfer. The dedication is made by written instrument and is completed with an acceptance.
- D. Reservation - Reservation of land does not involve any transfer of property rights. It constitutes an obligation to keep property free from development for a stated period of time.

DESIGN STANDARDS

I. Streets and Roads

The design of all roads within Cofield shall be in accordance with the accepted policies of the North Carolina Department of Transportation, Division of Highways, as taken or modified from the American Association of State Highway Officials' (AASHTO) manuals.

The provision of street rights-of-way shall conform and meet the recommendations of the Thoroughfare Plan, as adopted by the Village of Cofield and the North Carolina Department of Transportation.

The proposed street layout shall be coordinated with the existing street system of the surrounding area. Normally the

proposed streets should be the extension of existing streets if possible.

The urban planning area shall consist of that area within the urban planning boundary as depicted on the mutually adopted Cofield Thoroughfare Plans.

- A. Right-of-way Widths - Right-of-way (ROW) widths shall not be less than the following and shall apply except in those cases where ROW requirements have been specifically set out in the Thoroughfare Plan.

1. Rural	Minimum ROW
a. Principle Arterial	
Freeways	350 ft.
Other	200 ft.
b. Minor Arterial	100 ft.
c. Major Collector	100 ft.
d. Minor Collector	80 ft.
e. Local Road	* 60 ft.
2. Urban	
a. Major Thoroughfare other than Freeway and Expressway	90 ft.
b. Minor Thoroughfare	70 ft.
c. Local Street	* 60 ft.
d. Cul-de-sac	** Variable

The subdivider will only be required to dedicate a maximum of 100 feet of right-of-way. In cases where over 100 feet of right-of-way is desired, the subdivider will be required only to reserve the amount in excess of 100 feet. On all cases in which right-of-way is sought for a fully controlled access facility, the subdivider will only be required to make a reservation. It is strongly recommended that

* The desirable minimum right-of-way (ROW) is 60 ft. If curb and gutter is provided, 50 feet of ROW is adequate on local residential streets.

** The ROW dimension will depend on radius used for vehicular turn-around. Distance from edge of pavement of turn-around to ROW should not be less than distance from edge of pavement to ROW on street approaching turnaround.

subdivisions provide access to properties from internal streets, and that direct property access to major thoroughfares, principle and minor arterials, and major collectors be avoided. Direct property access to minor thoroughfares is also undesirable.

A partial width right-of-way, not less than sixty feet in width may be dedicated when adjoining undeveloped property that is owned or controlled by the subdivider; provided that the width of a partial dedication be such as to permit the installation of such facilities as may be necessary to serve abutting lots. When the said adjoining property is subdivided, the remainder of the full required right-of-way shall be dedicated.

B. Street Widths: Width for street and road classifications other than local shall be as required by the Thoroughfare Plan. Width of local roads and streets shall be as follows:

1. Local Residential

Curb and Gutter section: 26 feet, face to face of
curb

Shoulder section: 20 feet to edge of pavement, 4
foot shoulders

2. Residential Collector

Curb and Gutter section: 34 feet, face to face of
curb

Shoulder section: 20 feet to edge of pavement, 6
foot shoulders

C. Geometric Characteristics - The standards outlined below shall apply to all subdivision streets proposed for addition to the State Highway System or Municipal Street System. In cases where a subdivision is sought adjacent to a proposed thoroughfare corridor, the requirements of dedication and reservation discussed under Right-of-Way shall apply.

1. Design Speed - The design speed for a roadway should be a minimum of 5 mph greater than the posted speed limit. The design speeds for subdivision type streets shall be:

DESIGN SPEEDS				
Facility Type	Desirable Speed	----- Minimum Speed ----- Level Rolling Mountainous		

Rural				
Minor Collector Roads	60	50	40	30
Local roads, including Residential Collectors and Local Residential	50	* 50	* 40	* 30
Urban				
Major Thoroughfares, other than Freeway, Expressway, or Parkway	60	50	50	50
Minor Thoroughfares	60	50	40	40
Local Streets	40	** 40	** 30	** 30

* Based on projected annual average daily traffic of 400-750. In cases where road will serve a limited area and small number of dwelling units, minimum design speeds can be reduced further.

** Based on projected annual average daily traffic of 50-250.

2. Maximum and Minimum Grades

- a. The maximum grades in percent shall be:

MAXIMUM VERTICAL GRADE			
Design Speed	---- Terrain ----		
	Level	Rolling	Mountainous
60	4	5	6
50	5	6	7
40	6	7	8
30		9	10
20			12

- b. A minimum grade for curbed streets should not be less than 0.5%.
- c. Grades for 100 feet each way from intersections (measured from edge of pavement) should not exceed 5%.
- d. For streets and roads with projected annual average daily traffic less than 250, short grades less than 500 feet long may be 50% greater than the value in the above table.

3. Minimum Sight Distance - In the interest of public safety, no less than the minimum sight distance applicable shall be provided. Vertical curves that connect each change in grade shall be provided and calculated using the following parameters:

SIGHT DISTANCE				
Design Speed, MPH	30	40	50	60
Stopping Sight Distance:				
Minimum (ft.)	200	275	400	525
Desirable Minimum (ft.)	200	325	475	650
Minimum K* Value for:				
Crest Curve	30	80	160	310
Sag Curve	40	70	110	160
Passing Sight Distance:				
Minimum Passing Distance for 2 lanes, in feet	1,035	1,460	1,915	2,380

(General practice calls for vertical curves to be multiples of 50 feet. Calculated lengths shall be rounded up in each case.)

Sight distance provided for stopped vehicles at intersections should be in accordance with "A Policy on Geometric Design of Highways and Streets, 1984".

* K is a coefficient by which the algebraic difference in grade may be multiplied to determine the length in feet of the vertical curve which will provide the desired sight distance.

4. The "Superelevation Table" below shows the maximum degree of curve and related maximum superelevation for design speeds. The maximum rate of roadway superelevation (e) for rural roads with no curb and gutter is 0.08. The maximum rate of superelevation for urban streets with curb and gutter is 0.06, with 0.04 being desirable.

SUPERELEVATION TABLE			
Design Speed	Maximum e*	Minimum Radius ft.	Max. Deg. of Curve
30	0.04	302	19 00'
40	0.04	573	10 00'
50	0.04	955	6 00'
60	0.04	1,528	3 45'
30	0.06	273	21 00'
40	0.06	509	11 15'
50	0.06	849	6 45'
60	0.06	1,380	4 15'
30	0.08	252	22 45'
40	0.08	468	12 15'
50	0.08	764	7 30'
60	0.08	1,206	4 45'

* e = rate of roadway superelevation, foot per foot

D. Intersections

- Streets shall be laid out so as to intersect as nearly as possible at right angles, and no street should intersect any other street at an angle less than sixty-five (65) degrees.
- Property lines at intersections should be set so that the distance from the edge of pavement, of the street turnout, to the property line will be at least as great as the distance from the edge of pavement to the property line along the intersecting streets. This property line can be established as a radius or as a sight triangle. Greater offsets from the edge of pavement to the property lines will be required, if necessary, to provide sight distance for the stopped vehicle on the side street.
- Offset intersections are to be avoided. Intersections which cannot be aligned should be separated by a minimum length of 200 feet between survey centerlines.

E. Cul-de-sacs

Cul-de-sacs shall not be more than five hundred (500) feet in length. The distance from the edge of pavement on the vehicular turnaround to the right-of-way line should not be less than the distance from the edge of pavement to right-of-way line on the street approaching the turnaround. Cul-de-sacs should not be used to avoid connection with an existing street or to avoid the extension of an important street.

F. Alleys

1. Alleys shall be required to serve lots used for commercial and industrial purposes except that this requirement may be waived where other definite and assured provision is made for service access. Alleys shall not be provided in residential subdivisions unless necessitated by unusual circumstances.
2. The width of an alley shall be at least twenty (20) feet.
3. Dead-end alleys shall be avoided where possible, but if unavoidable, shall be provided with adequate turnaround facilities at the dead-end as may be required by the Planning Board.

G. Permits For Connection To State Roads

An approved permit is required for connection to any existing state system road. This permit is required prior to any construction on the street or road. The application is available at the office of the District Engineer of the Division of Highways.

H. Offsets To Utility Poles

Poles for overhead utilities should be located clear of roadway shoulders, preferably a minimum of at least 30 feet from the edge of pavement. On streets with curb and gutter, utility poles shall be set back a minimum distance of 6 feet from the face of curb.

I. Wheelchair Ramps

All street curbs being constructed or reconstructed for maintenance purposes, traffic operations, repairs, correction of utilities, or altered for any reason, shall provide wheelchair ramps for the physically handicapped at intersections where both curb and gutter and sidewalks are provided and at other major points of pedestrian flow.

Wheelchair ramps and depressed curbs shall be constructed in accordance with details contained in the Department of Transportation, Division of Highways, publication entitled, "Guidelines, Curb Cuts and Ramps for Handicapped Persons."

J. Horizontal Width on Bridge Deck

1. The clear roadway widths for new and reconstructed bridges serving 2 lane, 2 way traffic should be as follows:

- a. Shoulder section approach

- i. Under 800 ADT design year:

Minimum 28 feet width face to face of parapets of rails or pavement width plus 10 feet, whichever is greater.

- ii. 800 - 2000 ADT design year:

Minimum 34 feet width face to face of parapets of rails or pavement width plus 12 feet, whichever is greater.

- iii. Over 2000 ADT design year:

Minimum width of 40 feet, desirable width of 44 feet width face to face of parapets of rails.

- b. Curb and gutter approach

- i. Under 800 ADT design year:

Minimum 24 feet face to face of curbs.

- ii. Over 800 ADT design year:

Width of approach pavement measured face to face of curbs.

Where curb and gutter sections are used on roadway approaches, curbs on bridges shall match the curbs on approaches in height, in width of face to face of curbs, and in crown drop. The distance from face of curb to face of parapet or rail shall be 1'6" minimum, or greater if sidewalks are required.

2. The clear roadway widths for new and reconstructed bridges having 4 or more lanes serving undivided two-way traffic should be as follows:

- a. Shoulder section approach - Width of approach pavement plus width of usable shoulders on the approach left and right. (Shoulder width 8' minimum, 10' desirable.)
- b. Curb and gutter approach - Width of approach pavement measured face to face of curbs.



